UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

August 27th, 2021

KEY TAKEAWAYS

- COVID19 cases continue to grow in all health districts of Virginia, and models continue to project cases will rise into September.
- The model indicates that, in addition to vaccination, prevention measures such as mask usage and social distancing will be necessary to avoid the worst outcomes from Delta.
- Virginians are beginning to respond to Delta, increasing mask usage, seeking out vaccines, among other measures, which is improving the outlook.
- Vaccines are highly effective, particularly against hospitalization and death. Vaccination is the best method to protect yourself and your family.

27 per 100k
Average Daily Cases
Week Ending August 22, 2021

59 per 100k
Potential Peak Average Delta Variant Scenario Daily Cases, Week Ending October 1, 2021

7,382
Average Daily 1st Doses
August 24, 2021

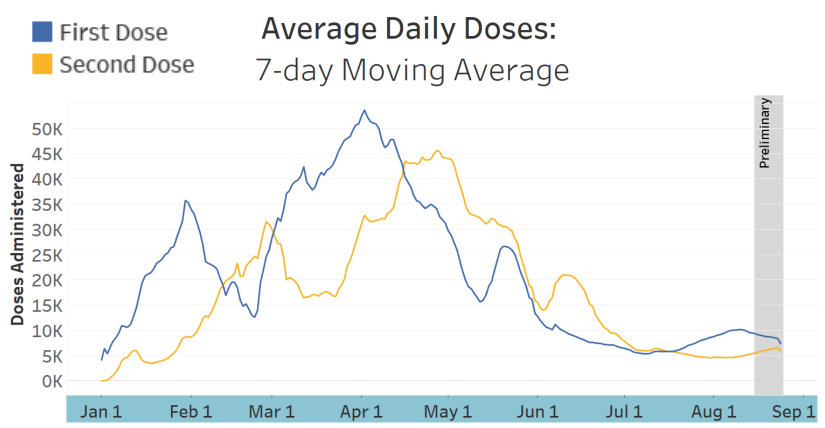
5,949
Average Daily 2nd Doses
August 24, 2021

KEY FIGURES

Reproduction Rate
(Based on Confirmation Date)

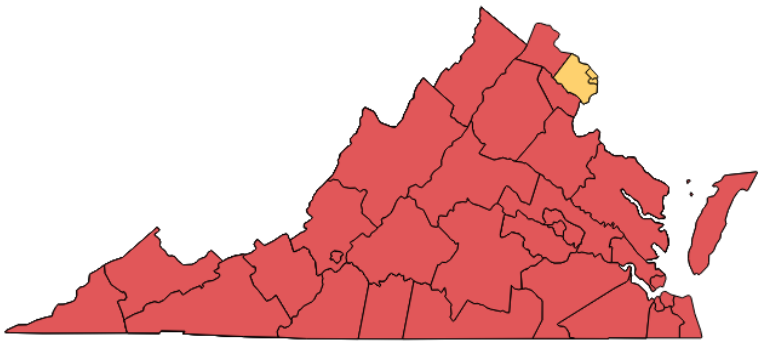
Region	R_e Aug. 23rd	Weekly Change
Statewide	**1.119**	**-0.001**
Central	1.137	0.005
Eastern	1.092	-0.038
Far SW	1.117	-0.017
Near SW	1.124	0.009
Northern	1.090	0.019
Northwest	1.138	0.007

Vaccine Administrations



Growth Trajectories: 32 Health Districts in Surge

Status	# Districts (prev week)
Declining	0 (0)
Plateau	0 (0)
Slow Growth	3 (2)
In Surge	32 (33)



VIRGINIA'S HEALTH IS IN OUR HANDS. Do your part, stop the spread.

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THE MODEL

The UVA COVID-19 Model and the weekly results are provided by the UVA Biocomplexity Institute, which has over 20 years of experience crafting and analyzing infectious disease models. It is a (S)usceptible, (E)xposed, (I)nfected, (R)ecovered epidemiological model designed to evaluate policy options and provide projections of future cases based on the current course of the pandemic. The Institute is also able to model alternative scenarios to estimate the impact of changing health behaviors and state policy.

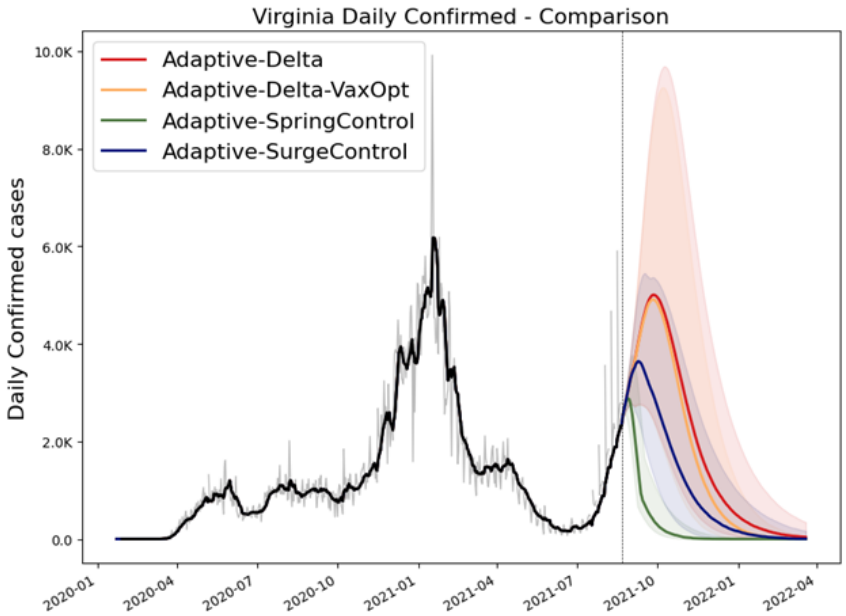
COVID-19 is a novel virus, and the variant mix changes constantly. The model improves as we learn more.

THE PROJECTIONS

The UVA team continues to improve the model. The UVA model uses an "adaptive fitting" methodology, where the model traces past and current trends and uses that information to predict future cases at the local level. The "Adaptive-Delta" scenario adds the known effects of the newly dominant Delta variant (B.1.617.2) to transmission rates. This models supersedes the older "Adaptive" models which were calibrated to the earlier Alpha variant (B.1.1.7). All four scenarios also incorporate projections on the impact of vaccines, including current vaccination rates and the stalled rate of vaccine uptake. The "VaxOpt" scenarios show the impact of a *hypothetical* increase in vaccine acceptance to 85% of the adult population by Labor Day. Two hypothetical control scenarios have also been added. The "Surge Control" scenario shows the impact of a 25% reduction in transmission rates through mask-usage and social distancing, while the "Spring Control" scenario shows a return to the low transmission rates seen this spring.

MODEL RESULTS

With the Delta virus dominant, the model projects that cases will surge through the fall, reaching levels not seen since February in just a few weeks. Vaccination rates are still below herd immunity levels and, with many Virginian's behavior returning to normal, the virus has room to run. If the Delta variant continues to spread, **cases could possibly peak at levels near previous January peaks**. To lessen the projected peak, we must give vaccines time to have an impact. Increased mask usage and other prevention measures are already having an impact on the course of the pandemic. Do your part to stop the spread. Please continue to **practice good prevention** including masking, and **get vaccinated** as soon as eligible.



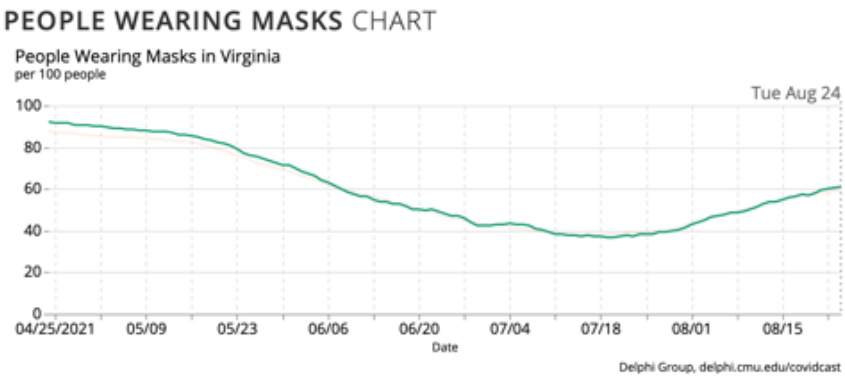
CASSANDRA'S CURSE

In ancient Greek mythology Cassandra was a priestess cursed to see the future clearly, but no one would believe her prophecies. A daughter of the King of Troy, she foresaw that her brother's abduction of Helen would lead to war and defeat, but could not prevent it. Rather, she was ridiculed as a madwoman. Famously, Cassandra charged the Trojan Horse with axe and torch but was stopped by Trojan soldiers. When the Greeks, hidden within, emerged and sacked Troy, she suffered along with those who mocked her.

With multiple scenarios and wide confidence intervals, the projections from the UVA Biocomplexity Institute are not nearly as clear as Cassandra's prophecies. In fact, they are not prophecies at all. Much like your car's GPS, the projections show where we are headed, but we can always change direction. Indeed, that seems to be happening, albeit slowly. Unlike the Trojans, many Virginians are heeding the warnings provided by the data and projections and are adjusting their behavior. If enough do so, we can avoid the worst outcomes from the Delta variant.

A modern portrait of Cassandra by Brooklyn-based street artist Elbow-Toe (Brian Adam Douglas). Fortunately, we do not have to suffer Cassandra's curse. "Cassandra (In Context)" by guy on the streets is licensed under CC BY-NC-ND 2.0. 2006.

Choosing Prevention



On May 14, following new CDC guidance, Governor Northam lifted Virginia's mask mandate. At the time vaccines had just become widely available and case rates were dropping. Virginians followed suit. According to survey data from the Delphi Group at Carnegie-Mellon, mask usage dropped by half by July, with about 40% of Virginia's self-reporting mask usage. By this week, however, that number had rebounded to 60%. Similarly, Virginia experienced a small jump in first dose vaccinations during the month of August.

Changing Direction

Virginians are not alone in confronting the threat posed by the Delta variant. Governor Northam announced a Public Health Order requiring universal masking in K-12 schools. The Virginia Department of Health is ramping up testing, contact tracing, and other efforts to combat the virus. Combined, these efforts are shifting the projected course of the pandemic in Virginia. Last week, the UVA Biocomplexity Institute projected that cases could exceed last January's peaks. This week, the projections come in just under those peaks.

While Virginian's efforts appear to be paying off, we still have a lot of work to do. Cases are already approaching levels last seen in January and continue to surge in most areas of the state. Hospitals are under increasing pressure. Meanwhile, there is still a large reservoir of unvaccinated and partially vaccinated Virginians susceptible to infection and severe illness. Cassandra's prophesies were doomed to come true, but unlike the Trojans, Virginians have an opportunity to change the course of the pandemic. Do your part to stop the spread. Please continue to practice good prevention including masking, and get vaccinated as soon as eligible.